RADIO TALK ON THE WORK OF THE WEATHER BUREAU.

by

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ANNOUNCER. It is our pleasure to have with us this evening Mr. John R. Weeks, meteorologist of the United States Weather Bureau in charge of the Baltimore office, section director of the climatological service for Maryland, Delaware, and the District of Columbia, and meteorologist of the Maryland State Weather Service. Mr. Weeks is a fellow of the American Meteorological Society, the American Association for the Advancement of Science, the Royal Meteorological Society of England, and others. He will tell us something about the work of the United States Weather Bureau and the Maryland State Weather Service.

Mr. WEEKS. Thank you. Everyone is affected either directly or indirectly by weather and climate and it is only natural that the work of the Weather Bureau should cover a large field, in fact an international one. Reports are exchanged with ships at sea, with airplanes in flight, with foreign countries not in a state of war, and could be extended to submarines in the depths of the sea and to mines in the depths of the earth if such action would aid in forecasting. Every advantage is taken of scientific knowledge and methods so far as available funds and personnel will permit. Radio has been a great help as a means of communication with otherwise inaccessible points. The Weather Bureau was the first civilian government agency to experiment with radio development and invention some forty years ago, at which time Dr. Fessenden was an employee of the Bureau, just as at an earlier period it was instrumental in establishing the system of standard time. At the present moment it is experimenting with stratosphere sounding balloons equipped with small short wave radio sets that will transmit to earth automatically the readings of unmanned instruments showing the meteorological conditions at that elevation.

Considering the wide variety of Weather Bureau work and the large part of the northern hemisphere that it concerns, the amount of money spent each year by the Weather Bureau is small, amounting to about $4,000,000 or about 3-1/5 cents per person per annum. This is possible because so many of those who do the work, while provided with government instruments and facilities, receive no pay other than the satisfaction of rendering a public service.

One third of last year's appropriation was devoted to weather service for commercial airways and the related research, including air mass analysis. This is an up to the minute activity day and night of which the general public knows little. Aviation weather forecasts containing details essential to flying are made at six hour intervals and field weather conditions are transmitted by teletype each hour of the twenty-four. Upper air observations are taken regularly from two to four times a day, with occasional extra observations when conditions warrant. All upper air observations are transmitted by teletype.

The principal airway stations in the states of Maryland and Delaware and in the District of Columbia rendering such reports are Washington, Baltimore, Annapolis, and Aberdeen, and there are lesser stations at Frostburg, Cumberland, and Delaware Breakwater. Airway weather information is designed for safety in air travel. It is not in any sense confidential but present working conditions do not make it available to the public except as bulletined at the airports or transmitted by Department of Commerce radio, the latter broadcast being in an abbreviated form.

Of the remaining funds a little less than one half is devoted to general forecast and warning service. For the conduct of this a very efficient and quite complete system of collection of reports required in preparing the daily weather maps is used, the code words of the individual messages being such as to save time, expense, and error and be easily and quickly translated into figures. It requires an hour only for the transmission and receipt at Baltimore of detailed reports from Canada, Bermuda, the West Indies, and all parts of the United States for preparation of the weather map, and the forecasts are issued at 10 in the morning and about 9:30 at night. A large part of the burden of distribution of the forecasts is taken by the daily newspapers and the broadcast stations.

Some forecasts are made that are not for general distribution, being adapted to special commercial interests. Among those at Baltimore may be mentioned special forecasts for the bananna importers and shippers, the oyster packers and shippers, the large vegetable canneries of the Eastern Shore and other parts of Maryland, the fishermen, the shippers of liquids, the produce trucks that travel the roads, the street railway, the railroads, the gas and electric company, the department stores, yachtsmen, aerial photographers, surveyors, and so on. Special forecasts given general distribution are cold wave warnings, heavy snow warnings, gale warnings (known as storm warnings), forecasts for shippers when damaging temperatures are indicated, river and flood warnings, and hurricane advisory messages.

Next in expense comes the climatological service, which has great value to the public through its indispensible use by city, state and government engineers in planning all sorts of public works, including drainage and flood protection, by agriculture in the development of crops; by courts of law and others in settling cases and claims,

by industry in locating manufacturing plants and in the distribution of manufactured products, and so on. A recent incident was the selection of Baltimore as a trans-Atlantic airport largely because of climatic advantages demonstrated by the records. In this work the Weather Bureau has the cooperation of the Maryland State Weather Service, established in May, 1891, and continued to the present time. The meteorologist and the more than fifty observers who report daily high and low temperatures, rain and snow amounts, and other weather items for their respective towns from readings of accurate government instruments carefully supervised, serve the State without pay, the appropriation, which until recently was $2,810 a year and has been reduced to $2,000 a year, being devoted to printed State publications and to the compilation of data in such form as to make special information readily available to engineers, agricultural interests, homeseekers, school teachers, students, and others. Printed publications are on file in libraries throughout the country. The State Weather Service operates within the University of Maryland budget.

Fourth in point of cost is the River and Flood Service. This takes daily readings of accurate government gages on all the principal rivers, makes daily predictions of coming river stages on the navigable streams, and issues warnings of floods for all streams of any consequence. In Maryland the service takes care of the Potomac River and tributaries and the Susquehanna River. Incidentally, upstream stages on the latter river are telegraphed twice daily to the companies supplying electricity in large quantities from waterpower dams to Philadelphia, Baltimore, Washington, and other cities of this section and to the Pennsylvania Railroad, the river reports being used as guidance in operating the dams. Records of flood rains and of flood stages are invaluable in planning flood control. Engineers complain that, under economy conditions since the Great War, the work has not been intensive enough to please them. For certain purposes both the climatological observations and the river observations are of the most value when continued for many years at the same place.

Fifth in point of cost is the Marine Meteorological Service. This works in close cooperation with the Hydrographic Office of the United States Navy. It receives ship weather reports from vessels traversing all seas, checks and keeps a record of the instruments used, and prepares charts and publications. Baltimore being a leading seaport many contacts with the ships are made at the Baltimore Weather Bureau office. Recently some fifty Civil Works Administration employees assigned to the bureau were engaged at Baltimore for six months in editing, classifying, and filing ship meteorological reports from all parts of the world which had accumulated under economy conditions that prevented their complete use. The ship's officers make these reports of daily observations to the bureau without pay.

The hurricane warning service is an interesting and spectacular part of Weather Bureau work, depending upon radio reports from ships at sea and upon observations taken at coastal and island stations. Its efficiency has recently been increased by added funds and resulting installation of a teletype system connecting the land stations so that reports are transmitted with ease and speed. The hurricane warnings are so accurate and are so efficiently distributed by radio and other means that marine disasters are avoided and precautions are taken to save lives and property in coastal areas in the Atlantic and Gulf states.

Time does not permit more than an enumeration of some other important branches of Weather Bureau work. There is the agricultural meteorological service which includes weekly weather-crop bulletins for each state and for the nation and is much concerned with droughts; the special cotton region and wheat region reports and daily bulletins; the orchard spraying and frost warning advices; the cranberry bog flooding and frost warning advices; snow surveys in the mountains for prediction of summer water supply for irrigation and for the great cattle and sheep herds of the West; forest fire weather reports and warnings; and many special investigations including among others intensive study of any possible methods of long range and seasonal weather forecasting.